ABSTRACT

A reactor system, plant and a process for the production of methanol from synthesis gas is described in which the reactor system comprises:

(a) a first reactor adapted to be maintained under methanol synthesis conditions having inlet means for supply of synthesis gas and outlet means for recovery of a first methanol-containing stream, said first reactor being charged with a first volume of a methanol synthesis catalyst through which the synthesis gas flows and on which in use, partial conversion of the synthesis gas to a product gas mixture comprising methanol and un-reacted synthesis gas will occur adiabatically; and

(b) a second reactor adapted to be maintained under methanol synthesis conditions having inlet means for supply of the gaseous first methanol-containing stream, outlet means for recovery of a second methanol-containing stream and cooling means, said second reactor being charged with a second volume of a methanol synthesis catalyst through which the gaseous first methanol-containing stream flows and on which, in use, further conversion of the synthesis gas to a product gas mixture comprising methanol will occur.